## EuroMix is about:

- All kind of chemicals, not only pesticides. Explore how these chemicals can be grouped based on in silico modelling (QSAR)

- Explore the working mechanism of chemicals and mixtures thereof and test their toxicity *in vitro* (e.g. Adverse Outcome Pathway (AOP))

- Perform exposure assessment(s) to multiple chemicals via multiple exposure routes

- Create a data and model platform (MCRA9)

- Discuss harmonisation between US-EPA, Europe and Codex Alimentarius

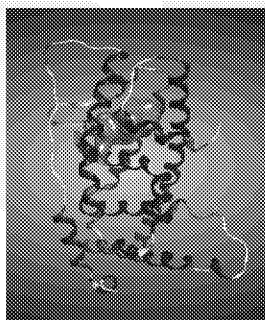*...because we are exposed to multiple chemicals via many sources*
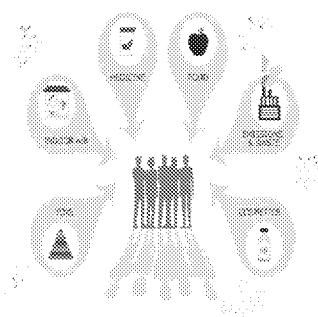
QSARs used for all kind of chemicals ❀ EuroMix

Literature research and in silico modelling for 1600 chemicals. Results available in EuroMix model and data platform (MCRA version 9)

Several chemical classes are addressed
1. pesticides (558)
2. biocides (34)
3. NIAS- FCM (66)
4. mycotoxins (20)
5. alkaloids (66)
6. environmental contaminants (dioxins, PCBs, flame retardants)
7. additives (several classes)

- 29 QSARs tested. Much uncertainty depending on the QSAR
- Recommendation: use endpoint specific QSAR for a (preliminary) decision to in/exclude chemicals into assessment groups
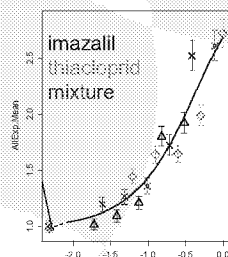- Include chemicals with a positive QSAR score in exposure assessment

# Test the most important chemicals in the diet (in vitro)

🌸 EuroMix

1) test priorities based on exposure consideration, 2) confirmation of dose-addition assumptions (mixtures) on the same curve as single chemicals 3) potency of each pesticide can be calculated using Benchmark Dose modelling

Similar mode of action

Dissimilar mode of action

imazalil
thiacloprid
mixture

clothianidin
thiacloprid
mixture
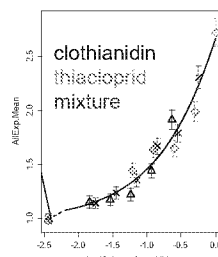
Test performed for: liver steatosis, skeletal malformation, anogenital distances) using many in vitro assays

Conclusion: dose addition   dose addition

PROAST for dose-response modelling and MCRA for exposure modelling

Insert dose-response (point of departure) information and combine it with exposure data (9 EU Member States)
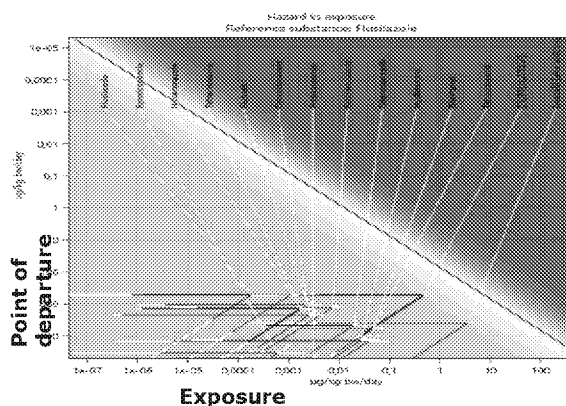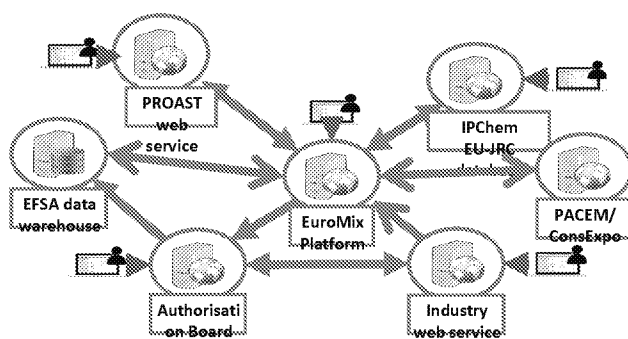
EuroMix model and data platform (MCRA)

EuroMix

Interoperability with other platforms in the i-cloud

MCRA link with European Commission (IPCHEM) and plans to link it to EFSA databases

Can be used for hazard assessment (grouping), hazard characterisation (BMD modelling), exposure and risk assessment

Stakeholders and harmonisation

EuroMix

- Two training and webinars on how to use the EuroMix models

- **Two stakeholder conferences**
  positive feedback on concept and models
  from European Commission, EFSA, industry and NGOs

- **Four harmonisation workshops**
  USA, Europe and Codex Alimentarius

- **WHO/FAO Expert Consultation**

- **EuroMix follow-up initiative**
  - user groups, other endpoint (e.g. DNT and liver cholestasis)

- **EuroMix output on Zenodo**
  https://zenodo.org/communities/euromixproject/?page=1&size=20

Food and Agriculture
Organization of the
United Nations

World Health
Organization

FAO/WHO Expert Consultation on Dietary risk assessment of chemical mixtures

(Risk assessment of combined exposure to multiple chemicals)

WHO, Geneva, 16-18 April 2019

Summary Report

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